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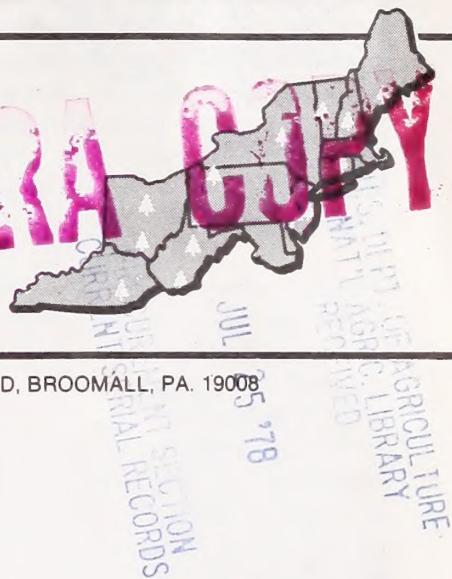
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Northeastern Forest Experiment Station

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A PREVIEW OF MARYLAND'S FOREST RESOURCE

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ABSTRACT. The 1976 forest survey of Maryland shows that the State has 2.5 million acres of commercial forest land, a decline of 13 percent since 1964. Ninety percent of it is in private ownership; 56 percent in sawtimber stands; 46 percent in the oak-hickory forest type. Timber volume has increased to 3.5 billion cubic feet of growing stock and 8.2 billion board feet of sawtimber. Seventy-three percent of the growing-stock volume is in sawtimber stands and 49 percent is in oak-hickory types. In a State that is dominated by hardwoods, loblolly pine is the single species with the most volume. Net growth exceeds removals for the State as a whole, but overcutting is occurring in certain units and in certain species.

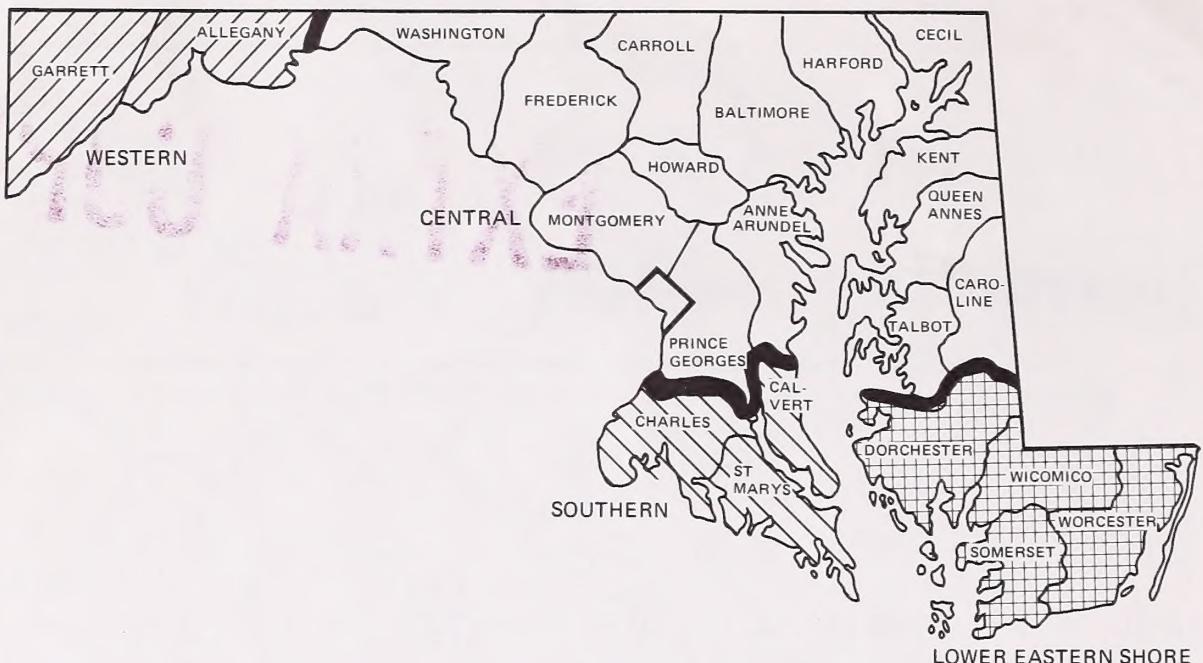
KEYWORDS: Forest survey, timber resource, forest area, timber volume, growth, removals, forestry statistics.

Forest is a common land use in Maryland, often dominating the landscape. The U. S. Forest Service in cooperation with the Maryland Forest Service has conducted three forest surveys of the State to inventory its forest resources. Each survey was designed to provide a reliable estimate of the extent and condition of the forest resource. A detailed statistical and analytical report of the most recent—1976—inventory is being prepared for publication. It will contain a comprehensive discussion of the current situation and apparent

trends of the forest resource. This is a preview of that report.

Because of the geography of the State, there are tremendous ranges of climatic conditions, soils, topography, plant communities, and land uses. In an effort to reduce this range and discuss similar resource situations together, we divided the State into four geographic units (Fig. 1). These units form the building blocks of our statewide information as well as providing more specific regional timber statistics.

Figure 1.—The four geographic units of Maryland, 1976.



FORESTS COVER 42 PERCENT OF THE LAND AREA

Forest land accounts for 2.7 million acres of the total 6.3 million acres of land in Maryland. Commercial forest land, which is land that is capable of producing at least 20 cubic feet of wood per acre per year and that is not withdrawn from timber production (as forested park land is, for example), makes up 40 percent of the land area or 2.5 million acres. This represents a decline of nearly 13 percent since the previous survey in 1964, most of it in the Central Unit where the population in the Baltimore-Washington corridor has been increasing rapidly.

The Central Unit has 44 percent of the commercial forest land in the State; the Lower Eastern Shore Unit, 21 percent; the Western Unit, 20 percent; and the Southern Unit, 15 percent. The proportion of commercial forest land in the total land area differs considerably among units. The Western Unit is 74 percent commercial forest land; the Southern Unit, 56 percent; the Lower Eastern Shore Unit, 46 percent; and the Central Unit, 29 percent.

Ninety percent of the commercial forest land—2.3 million acres—is in private ownership. This proportion ranges from 78 percent in the

Western Unit to 98 percent in the Southern Unit. The results of an ownership study conducted in conjunction with this forest survey show that approximately 95,800 private owners control this 2.3 million acres of commercial forest land. Some 53,900 are individuals (excluding farmers) such as doctors, truck drivers, retired people, and housewives. Together they control 734,600 acres of woodland. Almost half of the private woodland—over one million acres—is owned by farmers. Only 22 percent of private owners have harvested timber, but they own 53 percent of the private forest acreage. A more detailed report on these private landowners is currently being prepared for publication.

Timber stands can be divided on the basis of the size of the trees they contain—sawtimber, poletimber, and other smaller material. Maryland has a preponderance of sawtimber stands—1.4 million acres or 56 percent of the total. This proportion ranges from 38 percent in the Western Unit to 65 percent in the Central Unit. Poletimber stands rank second in all units, followed by other stands, which consist of sapling and seedling stands and nonstocked areas.

Timber stands may also be grouped by forest cover types. In Maryland 32 forest types recognized by Resources Evaluation were encountered,

and these were put into eight forest type groups. The Western Unit, because of its high elevation and cool average temperatures, has a majority of the acreage of the three type groups most commonly found in more northern latitudes—spruce-fir, white and red pine, and maple-beech-birch. The Lower Eastern shore has most of the bottomland oak-gum-cypress acreage and nearly half of the land in the loblolly and shortleaf pine type group. The other three groups—oak-pine, oak-hickory, and elm-ash-red maple—are found throughout the State. The oak-hickory group dominates, occupying 46 percent of the commercial forest land.

GROWING-STOCK VOLUME REACHES 3.5 BILLION CUBIC FEET

The volume of timber in Maryland has been increasing since the first Forest Service survey in 1950. Growing-stock volume is now 3.5 billion cubic feet and the sawtimber component is 8.2 billion board feet. Volume per acre figures have increased along with volume. The average acre of commercial forest land has 1,384 cubic feet or 3,237 board feet of net volume. There are large differences among units, however. For growing-stock volume, the Western Unit is lowest, with only 897 cubic feet per acre, while the Lower Eastern Shore Unit is highest, with almost twice that amount—1,655 cubic feet per acre. For sawtimber volume, the Western Unit is again lowest, with 1,486 board feet per acre, while the Central Unit edged out the Lower Eastern Shore for highest honors with 3,869 board feet per acre. These differences are a reflection of differences in species composition, growing conditions, timber management intensities, and past land use.

Just as sawtimber stands dominate the area, they account for 73 percent of the growing-stock volume and 86 percent of the sawtimber volume. Units with an above average proportion of sawtimber stands also have a higher than average proportion of their volume in these stands.

The oak-hickory forest type group dominates the timber of Maryland, accounting for 1.7 billion cubic feet or almost one-half of the growing-stock volume. Two-thirds of this volume is in the Central Unit. The loblolly and shortleaf pine type group accounts for nearly a quarter of the total, some 830 million cubic feet. Over half of this volume is in the Lower Eastern Shore Unit. The

third major type group is elm-ash-red maple; its 388 million cubic feet, found primarily in the Lower Eastern Shore and Central units, make up 11 percent of the growing-stock volume. The remaining five groups, oak-pine, maple-beech-birch, oak-gum-cypress, white and red pine, and spruce-fir (in order of decreasing volume) account for the remaining 16 percent of the growing-stock volume. The sawtimber volume is similarly distributed.

Maryland is predominately a hardwood State, with 2.7 billion cubic feet or 77 percent of its growing-stock volume in broad-leaved species. Hardwoods are common throughout Maryland, but over half—53 percent—of the volume is in the Central Unit. The oaks are the most common species group, accounting for 46 percent of the hardwood volume. The softwood volume—793 million cubic feet—is concentrated in the Lower Eastern Shore Unit where loblolly pine, the species with the most volume in the State (see the box on this page) dominates the woodlands.

THE TOP TEN

Here are the ten species that dominate the timber resource of Maryland:

	Million cubic feet	Percent of total
1. Loblolly pine	470	14
2. White oak	368	11
3. Yellow-poplar	351	10
4. Red maple	279	8
5. Virginia Pine	237	7
6. Sweetgum	221	6
7. Northern red oak	182	5
8. Chestnut oak	171	5
9. Black oak	155	4
10. Scarlet oak	136	4
Total	2,570	74

GROWTH EXCEEDS REMOVALS

In general, the timber resource is in a favorable situation when more timber is grown each year than is cut. At first glance, this appears to be the case in Maryland; our latest estimates (1975) show annual removals to be only 77 percent of annual net growth for growing stock and only 74 percent for sawtimber. For softwoods the level of growing-stock removals, 23.6 million cubic feet, is only

1.3 million cubic feet short of the annual net growth. The hardwood resource is not in danger of depletion; its growing-stock removals equal 72 percent of its net growth. Sweetgum is the only species that appears to be overcut statewide, and it is the only species that showed a decline in volume since 1963.

Although the situation statewide appears encouraging, some species are being overcut in some units. In general, softwoods are being removed faster than they are growing in the Central and Western units, while hardwood removals exceed hardwood growth in the Southern and Western units. The large amount of land clearing and loss of commercial forest land to nonforest land uses is perhaps the primary reason that removals exceed growth in the Central and Southern units. The volume of growing stock on land that has been cleared or otherwise changed from commercial forest land use during the period between inventories is considered as timber removals. In the

Western Unit timber is a more important component of the local economy than it is in the less timbered farm and urban areas to the east. There are many small sawmills and a good-sized wood-pulp mill in the area that require steady supplies of raw material. Also, the annual net growth per acre is low in this region, so it does not take too high a level of removals before overcutting occurs.

Another factor that must be considered in discussing growth and removals is the attitude of private landowners about harvesting timber. The objectives of some landowners preclude logging on their property. If enough of these owners make their timber unavailable, then overcutting may occur more frequently on those lands that are available and may cause serious problems in local areas. This is the case in certain sections of Maryland. The question of how much timber is available will be dealt with in more detail in the forthcoming ownership report.

**Table 1.—Land area of Maryland by land classes and geographic units, 1976
(In thousands of acres)**

Geographic unit	Commercial forest land	Unproductive forest land	Productive-reserved forest land	Total forest land	Nonforest land	All land
Central	1,105.5	—	113.7	1,219.2	2,596.5	3,815.7
Southern	376.1	0.6	5.0	381.7	289.6	671.3
Lower Eastern Shore	523.0	—	3.1	526.1	621.4	1,147.5
Western	518.1	—	8.1	526.2	169.5	695.7
Total, all units	2,522.7	0.6	129.9	2,653.2	3,677.0	6,330.2

**Table 2.—Area of commercial forest land in Maryland, by ownership classes and geographic units, 1976
(In thousands of acres)**

Ownership class	Central	Southern	Lower Eastern Shore	Western	Total
Federal	20.9	3.7	—	0.3	24.9
State	38.7	4.9	27.8	113.8	185.2
County and municipal	30.4	—	—	2.2	32.6
Total public	90.0	8.6	27.8	116.3	242.7
Forest industry	16.9	11.7	97.7	12.9	139.2
Farmer-owned	478.3	181.0	225.9	143.0	1,028.2
Miscellaneous private:					
Individual	316.8	125.9	124.1	167.8	734.6
Corporate	135.0	27.9	29.2	56.8	248.9
Other	68.5	21.0	18.3	21.3	129.1
Total private	1,015.5	367.5	495.2	401.8	2,280.0
All ownerships	1,105.5	376.1	523.0	518.1	2,522.7
Sampling error (in percent)	3	3	2	2	2

Table 3.—Form of private ownership by number of owners and acres of privately-owned commercial forest land with number of owners who have harvested timber and the acres they own, Maryland, 1976

Ownership	All owners		Owners who have harvested timber	
	Number	Thousand acres owned	Number	Thousand acres owned
Forest industry ^a	100	139.2	100	139.2
Farmer ^b	31,500	1,028.2	11,200	580.0
Miscellaneous:				
Individual	53,900	734.6	8,500	322.8
Corporate	5,500	248.9	400	112.0
Other	4,800	129.1	900	56.9
Total private	95,800	2,280.0	21,100	1,210.9

^a Includes unincorporated forest industry.

^b Includes part-time farmers.

Table 4.—Area of commercial forest land in Maryland, by stand-size classes and geographic units, 1976
(In thousands of acres)

Geographic unit	Sawtimber stands	Poletimber stands	Other stands	All classes
Central	717.4	236.2	151.9	1,105.5
Southern	227.8	85.1	63.2	376.1
Lower Eastern Shore	273.0	172.1	77.9	523.0
Western	194.9	172.1	151.1	518.1
Total, all units	1,413.1	665.5	444.1	2,522.7
Sampling error (in percent)	4	7	11	2

Table 5.—Area of commercial forest land in Maryland, by forest type groups and geographic units, 1976

Forest type group	Central	Southern	Lower Eastern Shore	Western	Total	Sampling error
	Thousand acres					Percent
White and red pine	12.0	—	—	31.4	43.4	37
Spruce-fir	—	—	—	11.2	11.2	^a
Loblolly and shortleaf pine	142.0	94.9	253.5	31.6	522.0	7
Oak-pine	47.3	52.8	44.0	19.0	163.1	15
Oak-hickory	680.1	172.8	68.8	240.0	1,161.7	5
Oak-gum-cypress	23.7	21.2	53.8	—	98.7	19
Elm-ash-red maple	116.3	26.4	96.8	83.2	322.7	12
Maple-beech-birch	84.1	8.0	6.1	101.7	199.9	19
Total, all type groups	1,105.5	376.1	523.0	518.1	2,522.7	2

^a Sampling error of 50 to 99 percent.

Table 6.—Net volume of growing stock and sawtimber on commercial forest land in Maryland, by stand-size classes and geographic units, 1976

Geographic unit	Stand-size Class				Sampling error
	Sawtimber stands	Poletimber stands	Other stands	All stands	
GROWING STOCK <i>Million cubic feet</i>					
Central	1,298.7	323.3	41.2	1,663.2	4
Southern	375.1	91.9	31.8	498.8	5
Lower Eastern Shore	622.3	212.9	30.2	865.4	4
Western	261.8	170.7	32.2	464.7	6
Total, all units	2,557.9	798.8	135.4	3,492.1	2
Sampling error (in percent)	3	9	14	2	
SAWTIMBER <i>Million board feet</i>					
Central	3,839.1	345.4	92.5	4,277.0	5
Southern	981.3	122.8	45.3	1,149.4	6
Lower Eastern Shore	1,640.9	273.8	55.4	1,970.1	5
Western	586.3	165.6	18.2	770.1	10
Total, all units	7,047.6	907.6	211.4	8,166.6	3
Sampling error (in percent)	3	11	19	3	

^a International $\frac{1}{4}$ -inch rule.

Table 7.—Net volume of growing stock and sawtimber on commercial forest land in Maryland, by forest type groups and geographic units, 1976

Forest type group	Geographic Unit					Sampling error
	Central	Southern	Lower Eastern Shore	Western	Total	
GROWING STOCK <i>Million cubic feet</i>						
White and red pine	26.6	—	—	16.4	43.0	^a
Spruce-fir	—	—	—	4.8	4.8	^b
Loblolly and shortleaf pine	205.7	126.5	474.4	23.2	829.8	7
Oak-pine	57.5	60.6	63.0	7.7	188.8	17
Oak-hickory	1,134.1	244.6	95.7	246.9	1,721.3	5
Oak-gum-cypress	45.2	24.5	78.3	—	148.0	22
Elm-ash-red maple	125.4	26.2	153.8	82.9	388.3	14
Maple-beech-birch	68.7	16.4	.2	82.8	168.1	21
Total, all type groups	1,663.2	498.8	865.4	464.7	3,492.1	2
SAWTIMBER <i>Million board feet</i>						
White and red pine	10.6	—	—	14.3	24.9	^a
Spruce-fir	—	—	—	9.5	9.5	^b
Loblolly and shortleaf pine	389.3	240.7	1,058.0	32.4	1,720.4	9
Oak-pine	110.5	129.5	120.6	10.1	370.7	18
Oak-hickory	3,142.1	625.7	203.6	428.9	4,400.3	6
Oak-gum-cypress	88.6	58.0	204.7	—	351.3	24
Elm-ash-red maple	343.5	59.7	383.2	144.0	930.4	15
Maple-beech-birch	192.4	35.8	—	130.9	359.1	24
Total, all type groups	4,227.0	1,149.4	1,970.1	770.1	8,166.6	3

^a Sampling errors of 50 to 99 percent.

^b Sampling errors of over 100 percent.

^c International $\frac{1}{4}$ -inch rule.

Table 8.—Net volume of growing-stock trees on commercial forest land in Maryland, by species and tree-size class, 1976^a

Species	Growing stock				Sawtimber	Sampling error ^b
	Poletimber trees	Sawtimber trees	All trees	Sampling error ^b		
<i>Million cubic feet</i>						
White-red pine	33.0	9.1	42.1	6	29.1	7
Loblolly pine ^c	104.2	378.7	482.9	7	1,238.9	8
Virginia pine	117.2	119.6	236.8	12	378.1	14
Other yellow pines	1.6	12.3	13.9	39	42.3	42
Other softwoods	6.8	10.5	17.3	31	38.0	37
Total softwoods	262.8	530.2	793.0	6	1,726.4	7
Soft maples	138.0	142.6	280.6	8	515.3	11
Hard maple	16.9	16.6	33.5	31	50.5	42
Hickory	41.8	73.0	114.8	11	253.4	14
Beech	19.1	76.1	95.2	16	287.8	19
Sweetgum	95.4	125.7	221.1	9	454.8	12
Yellow-poplar	62.8	287.7	350.5	10	1,070.0	11
Blackgum	40.8	58.0	98.8	10	213.2	14
Ash-walnut-cherry	55.6	61.6	117.2	14	211.0	16
Select white oaks	123.7	275.8	399.5	7	1,005.4	8
Select red oaks	42.7	143.3	186.0	12	481.0	14
Other white oaks	69.4	110.8	180.2	13	381.5	16
Other red oaks	134.2	333.9	468.1	7	1,216.0	9
Black locust	17.5	15.3	32.8	25	49.8	40
Other hardwoods	50.4	70.4	120.8	13	250.5	17
Total hardwoods	908.3	1,790.8	2,699.1	3	6,440.2	4
All species	1,171.1	2,321.0	3,492.1	2	8,166.6	3

^a Growing-stock trees are trees that satisfy national specifications for form and allowable cull. Poletimber trees are 5.0 to 8.9 inches dbh for softwoods and 5.0 to 10.9 inches dbh for hardwoods. Sawtimber trees are 9.0 inches dbh and larger for softwoods and 11.0 inches dbh and larger for hardwoods.

^b Sampling errors apply to the species totals for both growing-stock and sawtimber volumes.

^c Sampling error of 50 to 99 percent.

^d International 1/4-inch rule.

^e Includes 9.5 million cubic feet and 20.4 million board feet of pond pine and 3.0 million cubic feet and 6.8 million board feet of shortleaf pine.

Table 9.—Annual net growth and removals of growing stock and sawtimber on commercial forest land in Maryland, by softwoods and hardwoods, 1975^a

Species group	Growing stock		Sawtimber	
	Net growth	Removals	Net growth	Removals
<i>Thousand cubic feet</i>				
Softwoods	24,900	23,600	75,000	68,000
Hardwoods	86,100	61,800	223,000	153,000
Total	111,000	85,400	298,000	221,000
Sampling error of totals	31	18	42	20

^a Based on trends of growth and removals for the period between inventories as estimated from remeasured plots.

^b International 1/4-inch rule.

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